IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	James deBlanc, et al.	Examiner: Jerry T. Rahll
Serial No.:	10/646,572	Group Art Unit: 2874
Filed:	August 23, 2003	Docket No.: 200206163-1
Title:	Planar Layer with Optical Path	

REPLY APPEAL BRIEF UNDER 37 C.F.R. § 41.41

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Examiner's Answer mailed May 16, 2008, Appellants file this Reply Brief in accordance with 37 C.F.R. § 41.41.

AUTHORIZATION TO DEBIT ACCOUNT

It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Hewlett-Packard Development Company's deposit account no. 08-2025.

First, in the Examiner Answer, the examiner argues that Hosoya teaches channels formed "within" the substrates: "As clearly shown in Figure 1 of Hosaya et al., waveguides (8 and 11) are made of material (shaded) in substrates (7 and 10, respectively)." This statement is contrary to the express teachings in Hosoya.

In describing Figure 1 in the descriptive portion of the specification, Hosoya states:

> FIG. 1 shows an optical switch according to an embodiment of the present invention. The optical switch includes a substrate 6, a thin film layer 7 which constitutes a clad layer, a first optical waveguide 8 which constitutes a core **included in the thin film layer** ... (see Hosaya at column 3, lines 64-68: bold added).

Notice that Hosoya teaches that waveguide 8 is located in the thin film layer or clad layer, not the substrate 6. This distinction is important. Hosaya expressly teaches that the waveguide is located in the clad layer as opposed to being located in the substrate. Figure 2 of Hosaya shows a cross-sectional view with the waveguides 8 and 11 in respective clad layers 7 and 10.

The examiner has merely argued Figure 1 of Hosaya to support a position that the waveguides are formed within the substrate. Appellants believe that one skilled in the art would both review the figures and read the accompanying descriptive portion of the specification to understand the teachings in Hosaya.

Second, in the Examiner Answer, the examiner argues that Hosoya teaches two substrates that are stacked with a channel formed in both the first and second substrates of a multi-layered PCB. "Figure 1 of Hosaya et al. shows the substrates (7 and 10) in a stacked configuration, forming a printed circuit board." Appellants respectfully disagree.

Figs. 1 and 2 in Hosoya show a single substrate 6 with a first waveguide 8 formed in clad layer 7 and a second waveguide 11 formed in clad layer 10. Again, Hosoya does not disclose two stacked substrates to form a multi-layered PCB as recited in claim 1. This distinction is important. Hosaya shows a single substrate with two stacked clad layers.

Third, the examiner argues a very broad interpretation of the word "substrate" and states that this word "refers to any layer underneath another layer." Appellants strongly disagree.

In the field of optical waveguides, skilled artisans have developed distinct terminology and meaning to words. The terminology and associated meanings enable individuals skilled in the art to communicate with each other in this field. Terms such as "substrate" or "optical waveguide" or "clad layer" have a definitive and distinct meaning. Optical switches and waveguides are formed in a very precise manner using layers. Each layer (i.e., the substrate layer, the cladding layer, etc.) perform a very specific function to enable optical transmission through channels. One skilled in the art of optical switches uses these specific terms to describe and understand the technology.

In essences, the examiner is interpreting the cladding layer in Hosaya to be the substrate layer. This interpretation is contrary to Hosaya but also repugnant and contrary to the use of such terms in the art.

Furthermore, the examiner argues that no definition of substrate is provided to determine the plain meaning of this word. Further yet, the examiner argues that "Applicant does not provide a description of the properties for these substrates or how they are anything other than layers capable of having other layers stacked upon them, therefore, the layers in Hosoya et al. may also be considered substrates." Appellants disagree.

Figures 1-12 and the accompanying description in Appellant's specification discuss in great detail cladding layers, forming optical pathways in substrates, etc. The use of these terms is consistent with their plain meanings. Additionally, both Appellant's specification and Hosoya make a clear distinction between the terms "substrate" and "cladding layer" in discussing optical waveguides.

Fourth, regarding independent claim 16, the examiner argues that White teaches first and second substrates "in" respective first and second layers with each layer having a channeled face defining a channel "formed in" the substrate. Appellants disagree.

White expressly teaches that the channels are formed in a cladding layer, not in a substrate layer: "Cladding layer 206 has a trench or channel 212 of a substantial semi-circular cross section formed therein" (White at column 4, lines 61-63). Fig. 2A in White

shows a waveguide 200 having a top substrate 203 and a bottom substrate 204. Two cladding layers 205 and 207 are disposed between the two substrates. A conductive core 210 is disposed in the cladding layers, not in the substrates.

The examiner's interpretation of the word "substrate" is contrary to the plain meaning of this term. White clearly distinguishes between a layer known as the "substrate" and a layer known as the "cladding." As explained above, in the field of optical waveguides, skilled artisans have developed distinct terminology and meaning to words, such as substrate, cladding layer, waveguide, core, etc. The interpretation of the word "substrate" by the examiner is so broad as to be repugnant to the plain meaning of this term.

Fifth, the examiner argues that White in view of Yoshimura teaches vias through first and second layers of the multi-layered printed circuit board "to connect composite channels" (as recited in claim 16). Appellant's original appeal brief explains why this argument is flawed.

In view of the above, Appellants believe that all pending claims are in condition for allowance. Allowance of these claims is respectfully requested.

Respectfully submitted,

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